

AUTOMATIC STEREO TURNTABLE SYSTEM**PS-212/212A****OPERATING INSTRUCTIONS**

- Before operating the unit, please read this manual thoroughly.
- This manual should be retained for future reference.

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WARNING

- To prevent fire or shock hazard, do not expose the unit to rain or moisture.
- To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

FEATURES

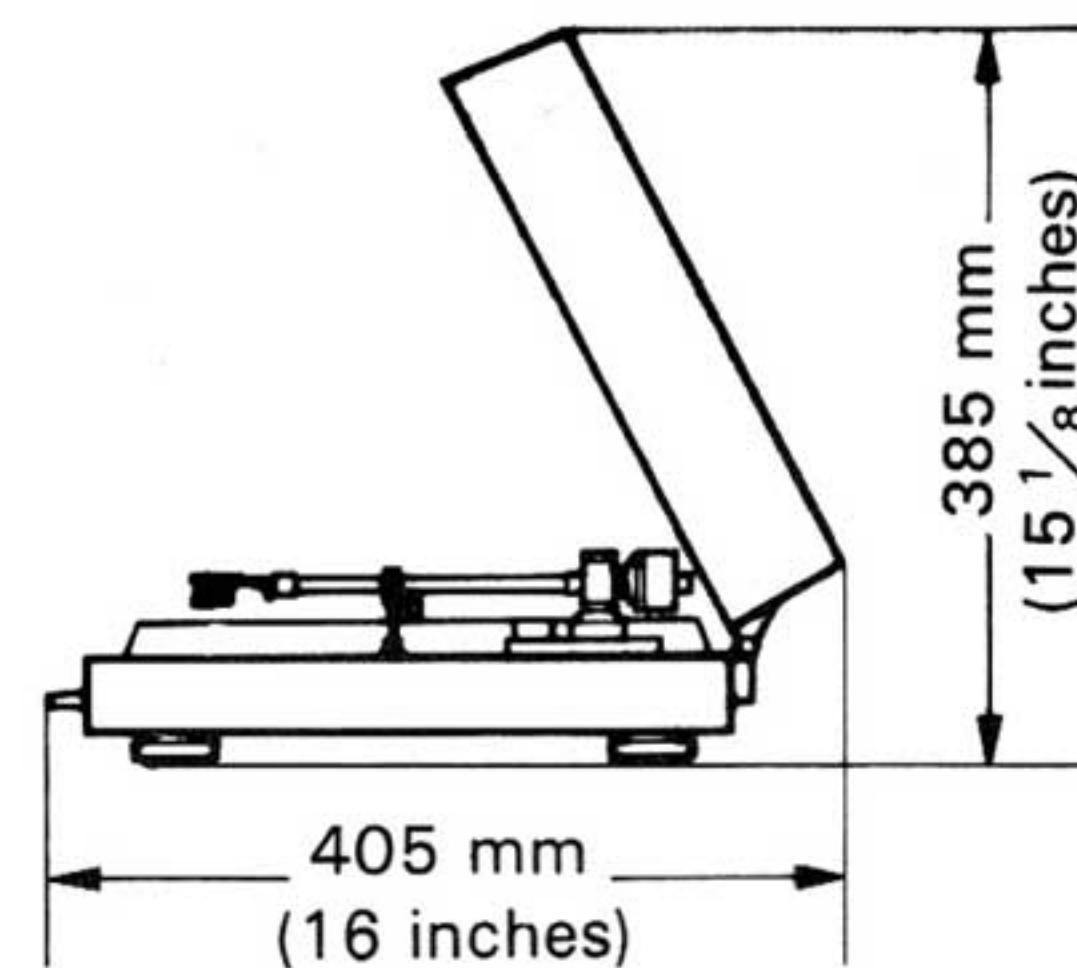
- A newly developed flat type BSL (brushless and slotless) direct drive servo motor provides freedom from torque irregularity.
- "Magnedisc servo system" which consists of a turntable with a magnetically coated rim and an associated detective head assures minimal wow and flutter and a high signal-to-noise ratio.
- Automatic tonearm return at end of record and reject function during play assures easy operation. The Cueing Lever will rise automatically when the Tonearm returns to its rest.
- The Reject Lever, Cueing Lever, Pitch Control and Speed Selector can be used with the dust cover closed.

PRECAUTIONS

- Operate the unit only on 120 V ac.
- Do not touch the adjustment holes located on the bottom. These holes should be adjusted only by authorized Sony personnel.
- Should any liquid or solid object fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time. To disconnect the cord, pull it out by grasping the plug. Never pull it out by the cord.

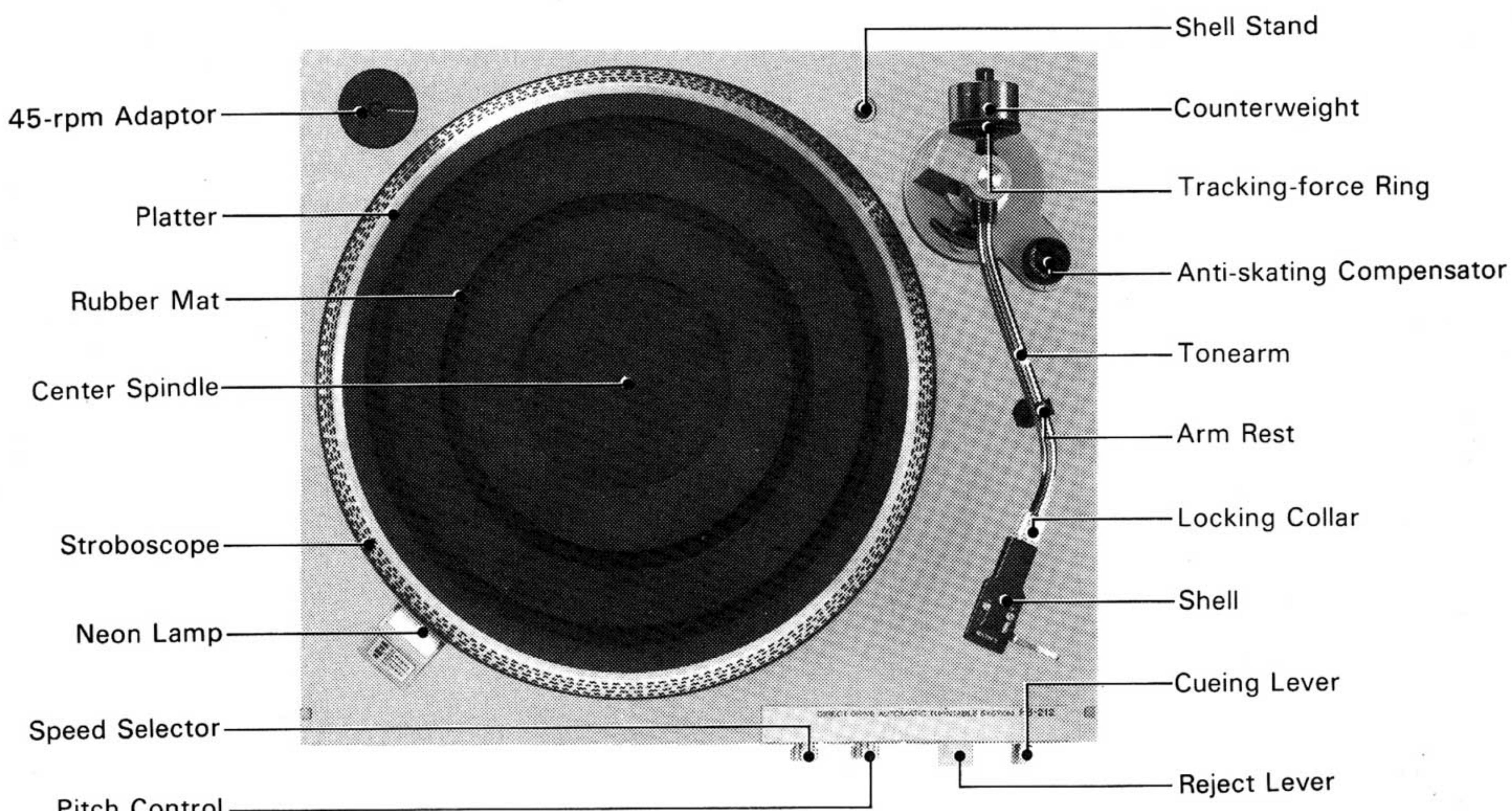
NOTES ON INSTALLATION

- Place the turntable on a level surface.
- Avoid placing the unit near electrical appliances (such as a television, hair dryer, or fluorescent lamp) which may cause hum or noise.
- Avoid any vibration such as from speakers, slamming of doors, etc.
- Keep the unit away from direct sunlight, extremes of temperature, or excessive dust and moisture.
- Allow 10 cm (4 inches) clearance behind the unit so that the cover can be opened.



PARTS IDENTIFICATION

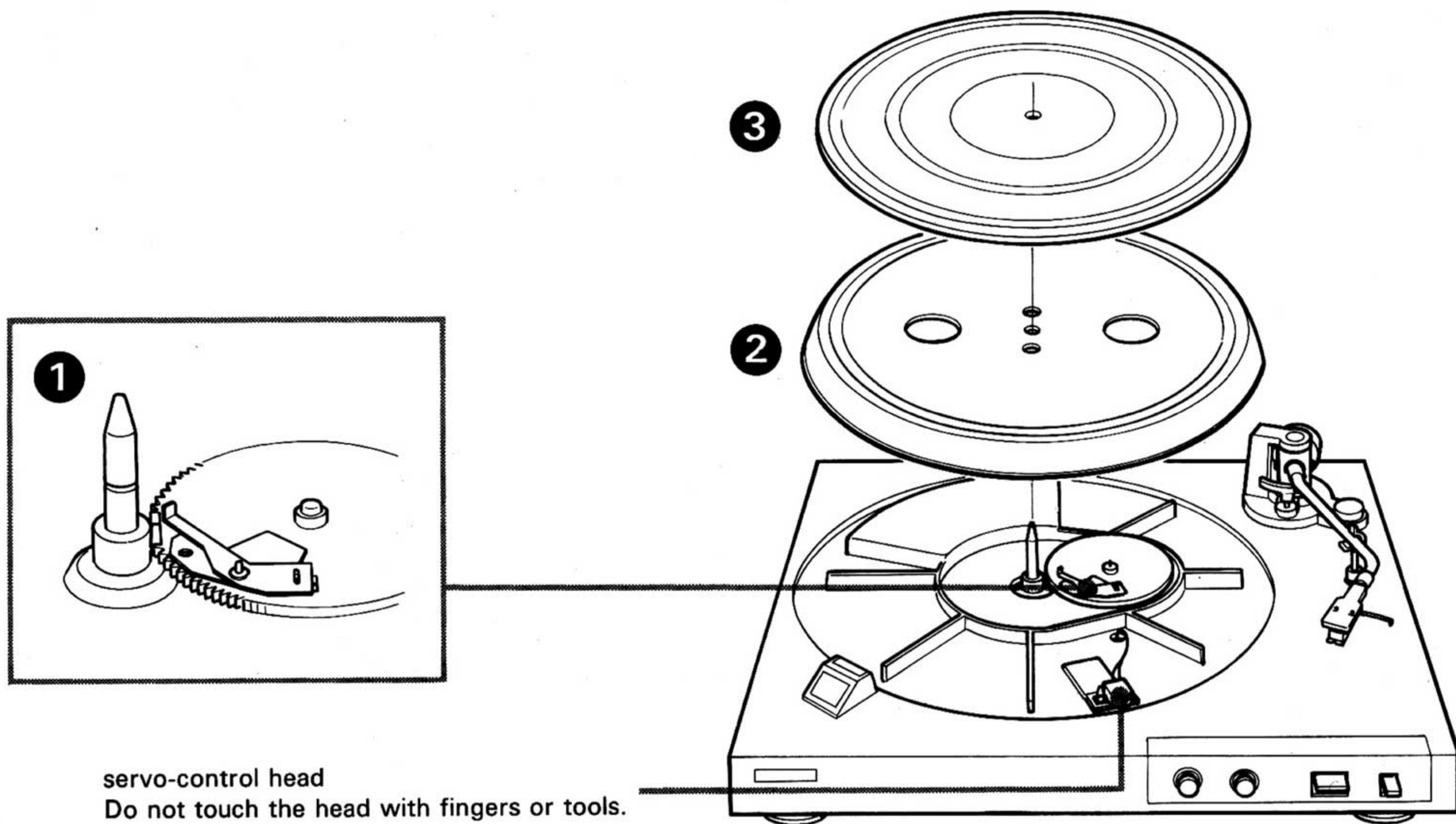
The picture below shows the appearance of the assembled turntable.



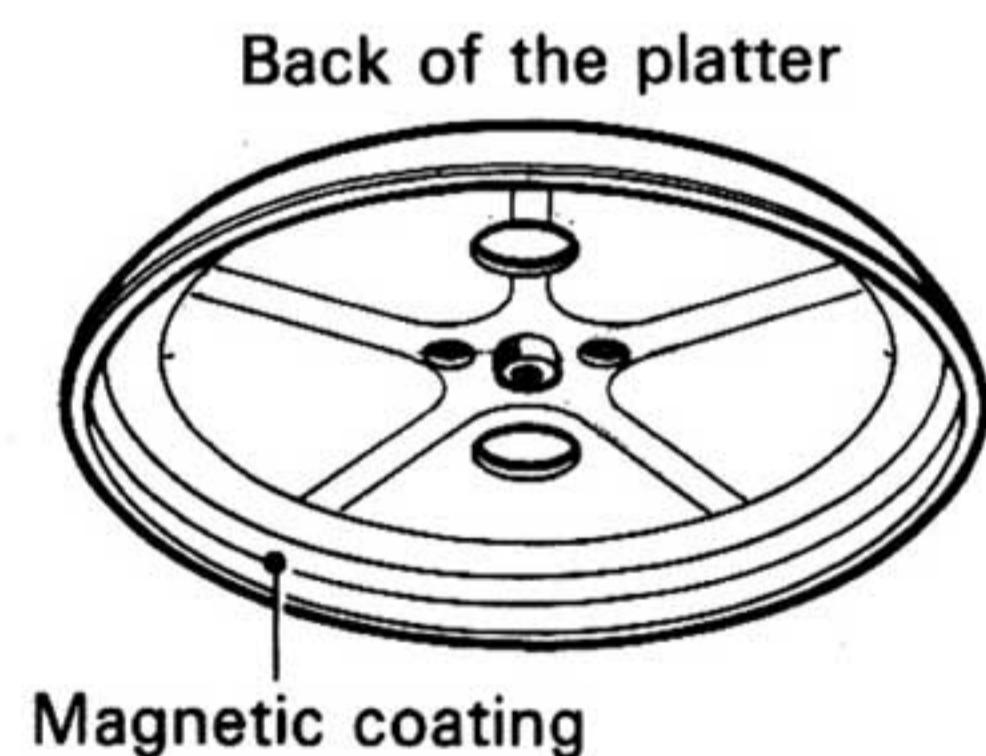
TURNTABLE ASSEMBLY

Do not connect the power cord or the connecting cords until after finishing the assembly.

Remove all packing material and clean the cabinet.

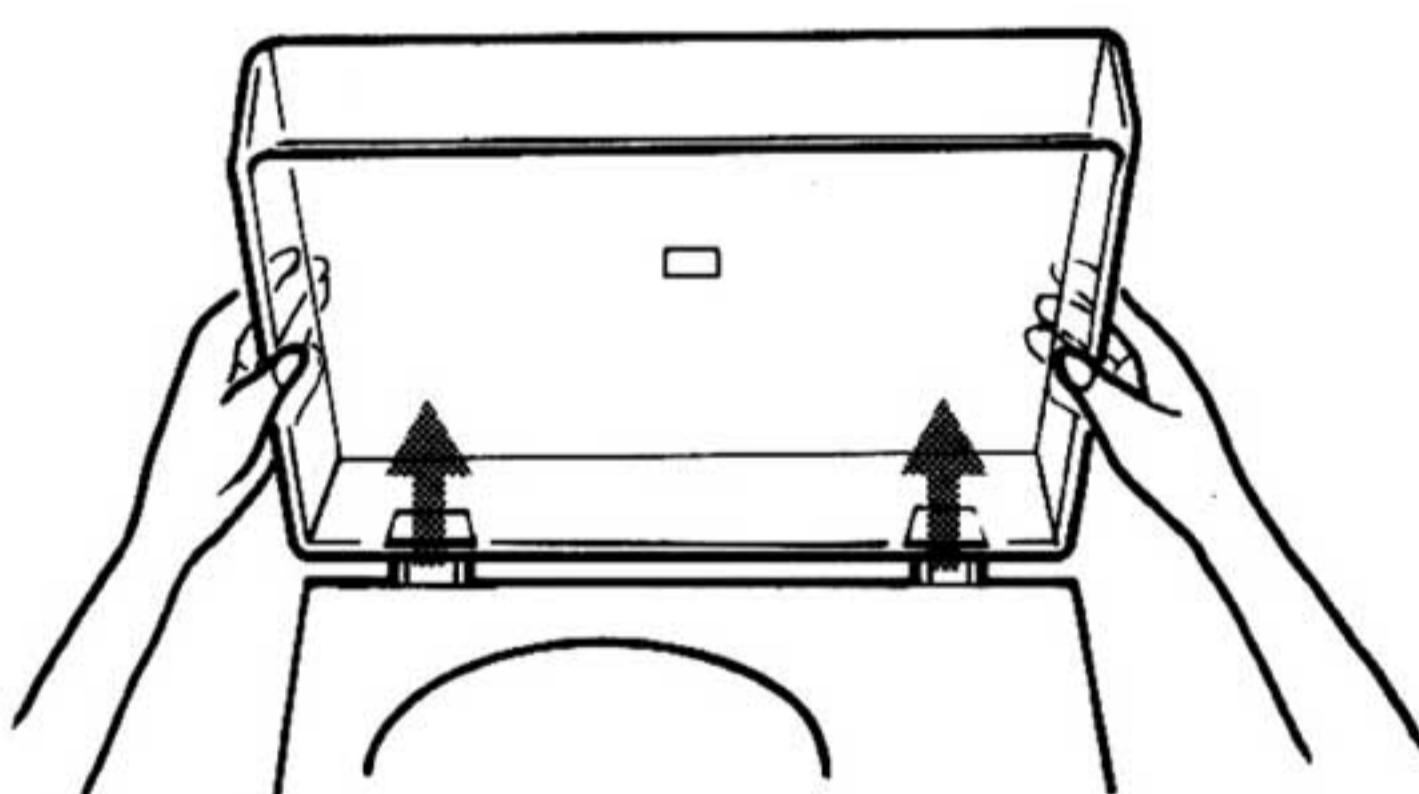


- ① Keep the metallic parts inside the white gear.
- ② Carefully place the platter on the motor board by matching the center hole and the center spindle.
- Do not touch the magnetic coating with your fingers or tools to avoid scratching it and damaging the electronic speed control system.



To remove the dust cover

Open the dust cover fully and slide it as illustrated while holding it with both hands.



- ③ Place the rubber mat on the platter.

- Never connect the power cord without the platter installed, otherwise the motor will run at an uncontrolled speed.
- Be careful that no foreign objects lodge under the platter.
- Do not attempt to rotate the platter counterclockwise by hand.
- Save the packing box and materials for possible future use.

TONEARM ADJUSTMENT

Do not connect the power cord or the connecting cords until the assembly and adjustments are complete.

The following procedures should be performed on a level surface. Be careful not to damage the stylus tip while making adjustments.

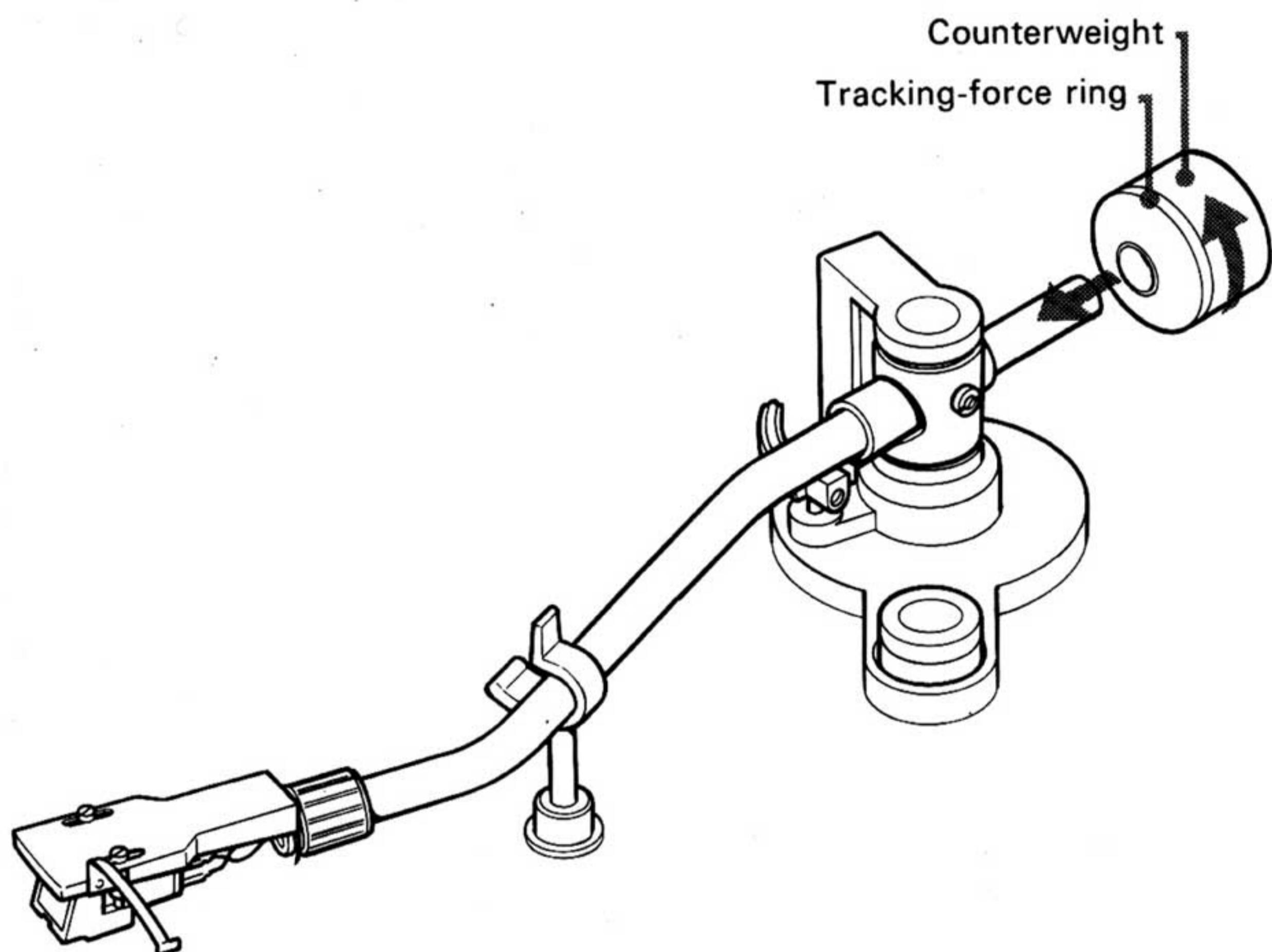
When a cartridge is replaced, readjustments are required.

Preparation

① Secure the Tonearm to the Arm Rest and lower the Cueing Lever.

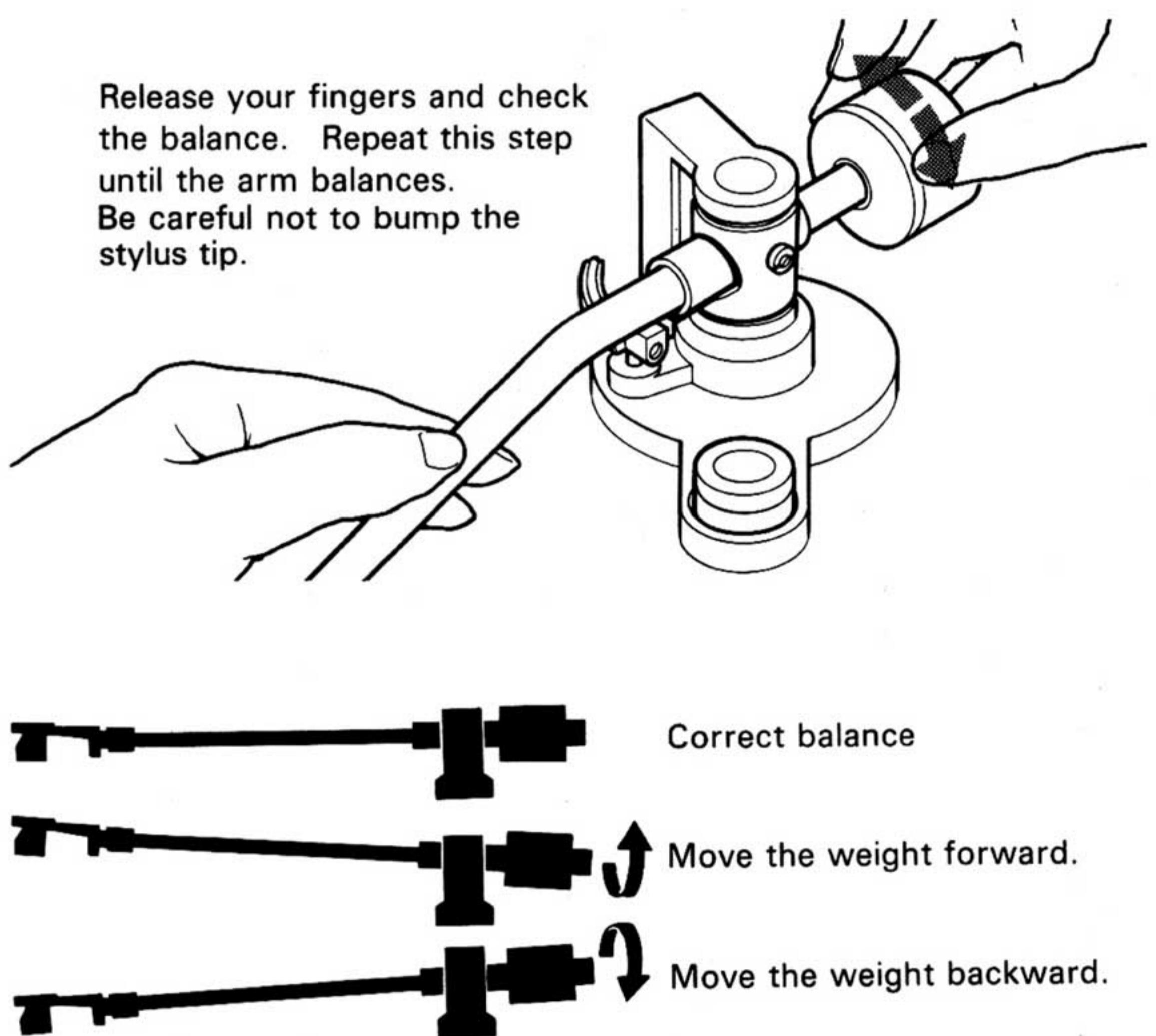
② Insert and turn the Counterweight counterclockwise several turns. (The Tracking-force Ring turns simultaneously.)

③ Remove the stylus guard, if fitted.

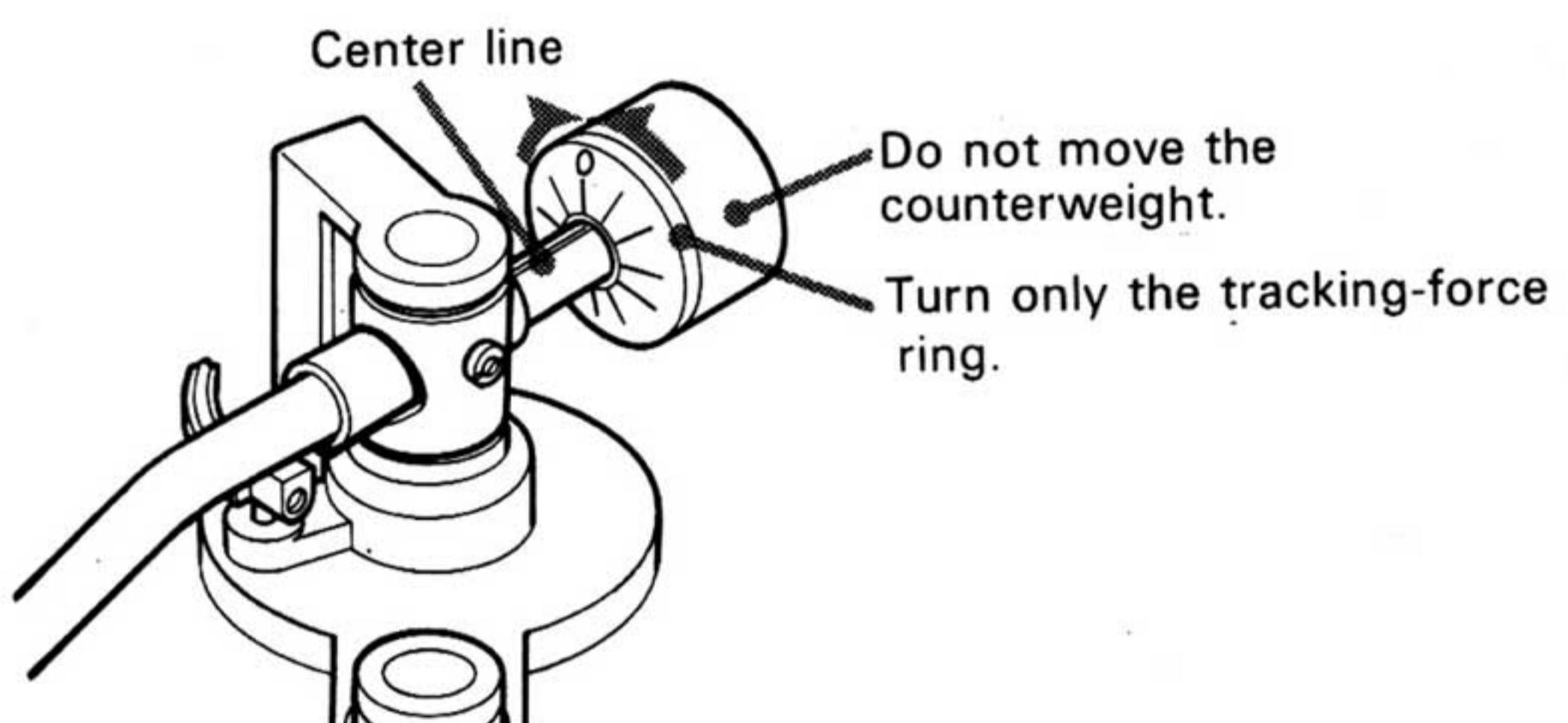


② Turn the Counterweight as required until the Tonearm is in a horizontally balanced position. (The Tracking-force Ring turns simultaneously.)

Release your fingers and check the balance. Repeat this step until the arm balances. Be careful not to bump the stylus tip.



③ While holding the Counterweight at the balanced position, separately turn the Tracking-force Ring until the "0" indication meets the center line on the Tonearm. Recheck the balance.

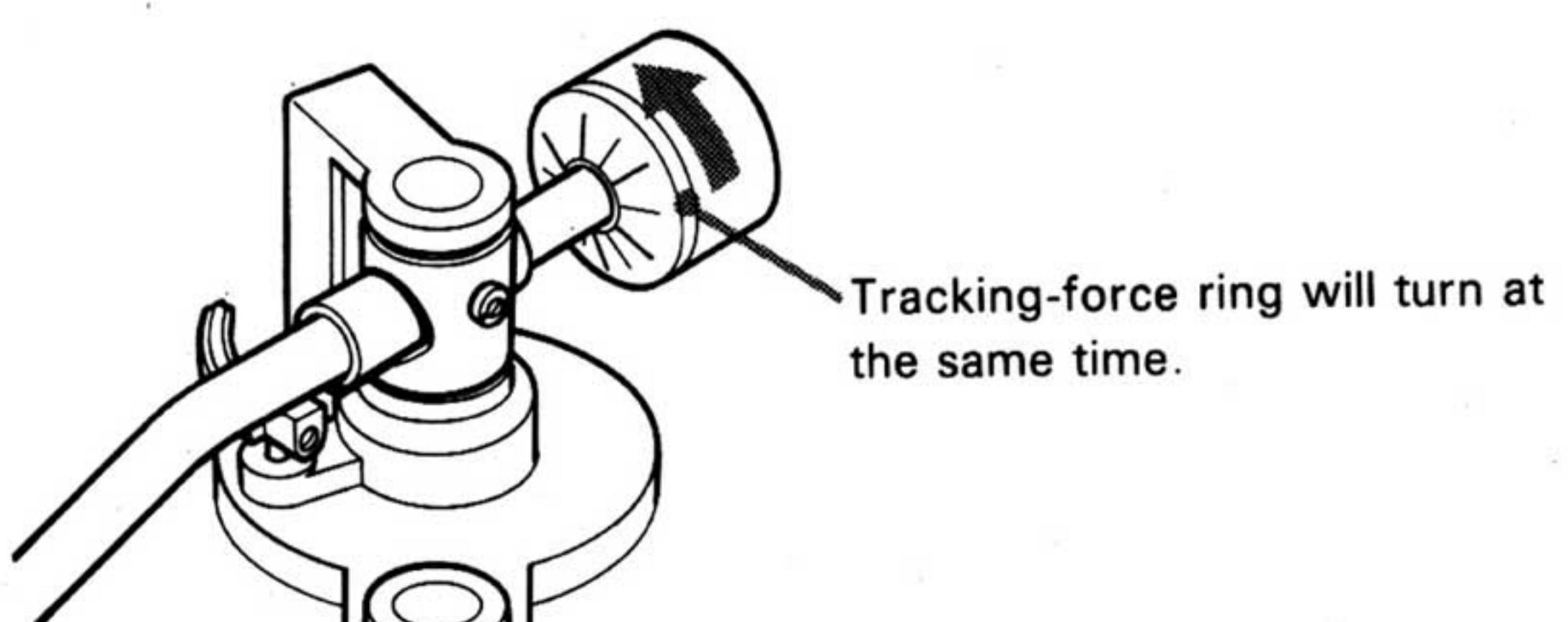
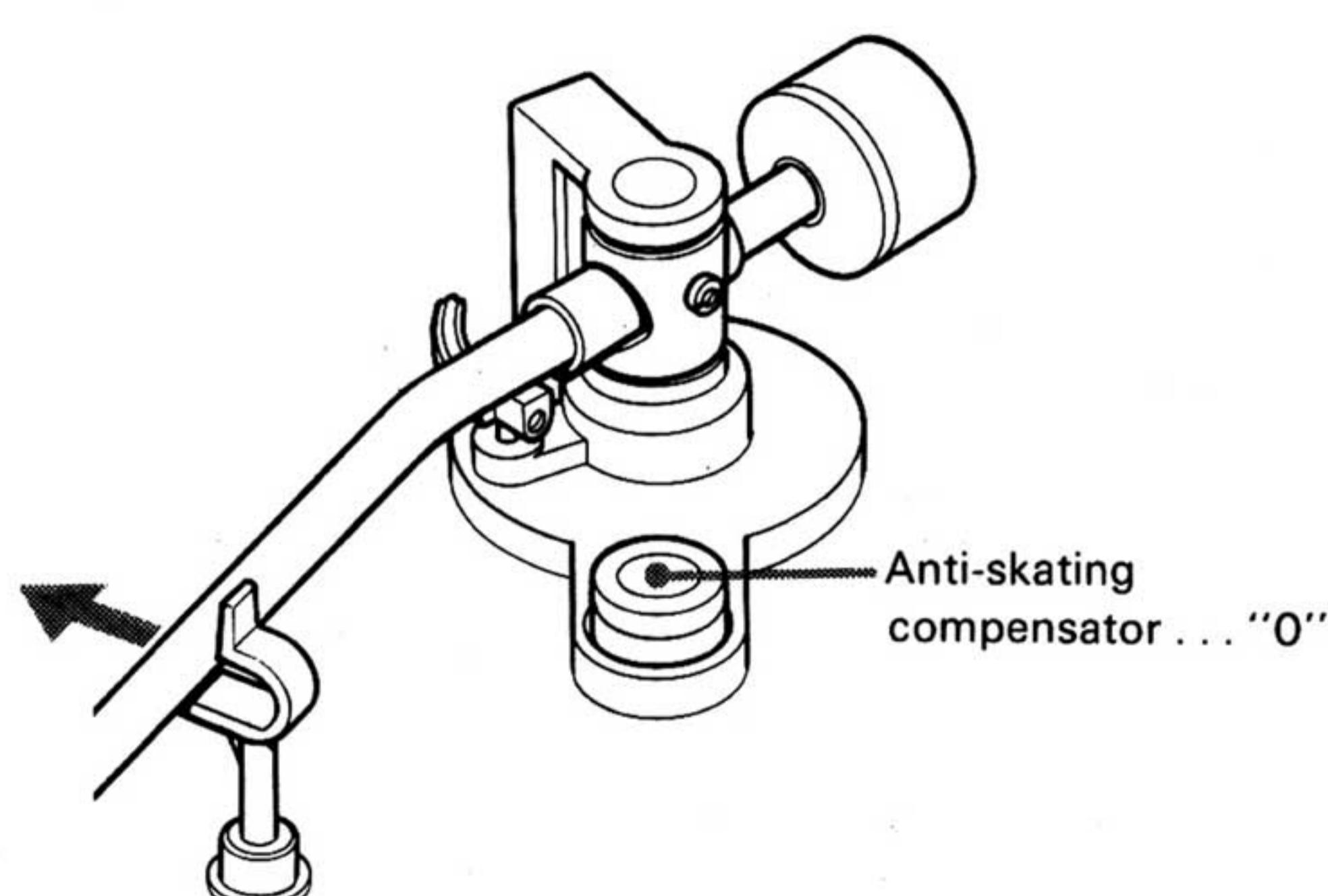


④ Lift up the Cueing Lever and secure the Tonearm to the Arm Rest again.

Tracking-force adjustment *2

Turn the Counterweight counterclockwise so that the recommended tracking-force figure for your cartridge is aligned with the center line on the Tonearm. The maximum tracking force available is 3 grams.

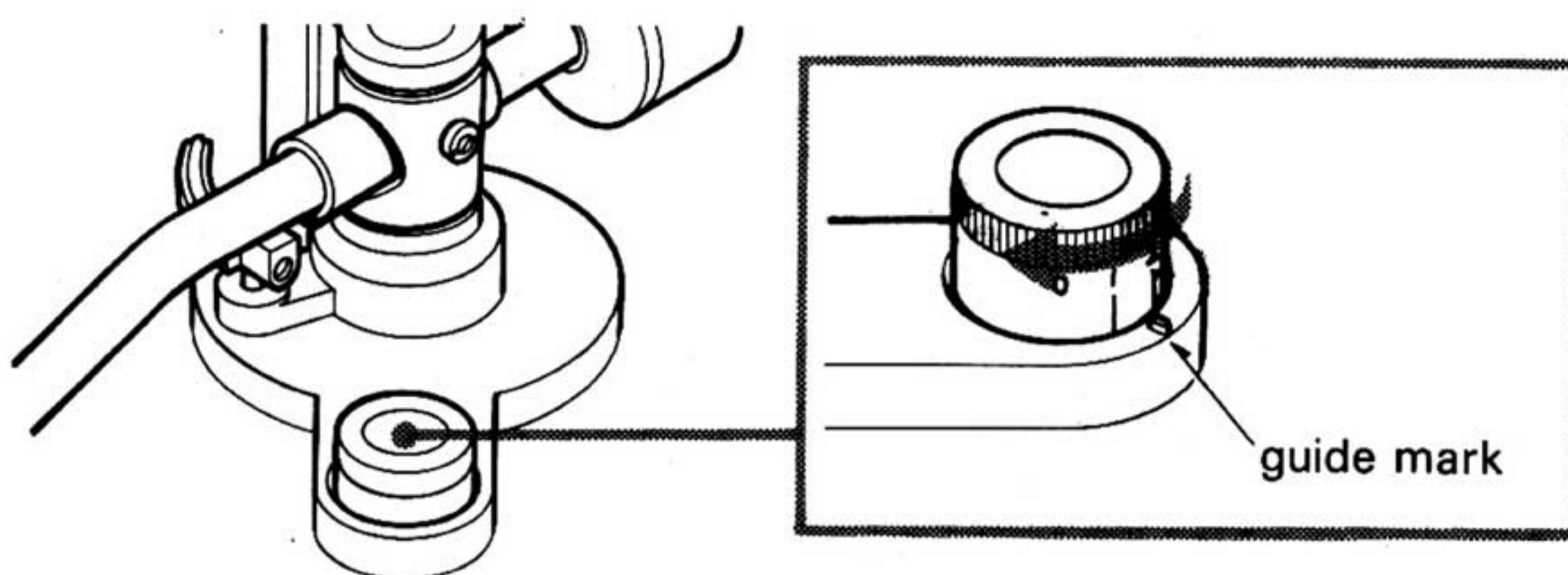
● The recommended tracking-force for the supplied cartridge is 2.5 grams.



CONNECTIONS

Anti-skating compensation *3

Turn the Anti-skating Compensator so that the guide mark is aligned with the tracking-force value used.



*1 Longitudinal balance adjustment

While playing the record, the weight of the tonearm is supported by the arm pivot and only tracking force is applied to the stylus tip. To accomplish this, the tonearm must first be balanced horizontally, with the tracking force indicator set at "O".

*2 Tracking force

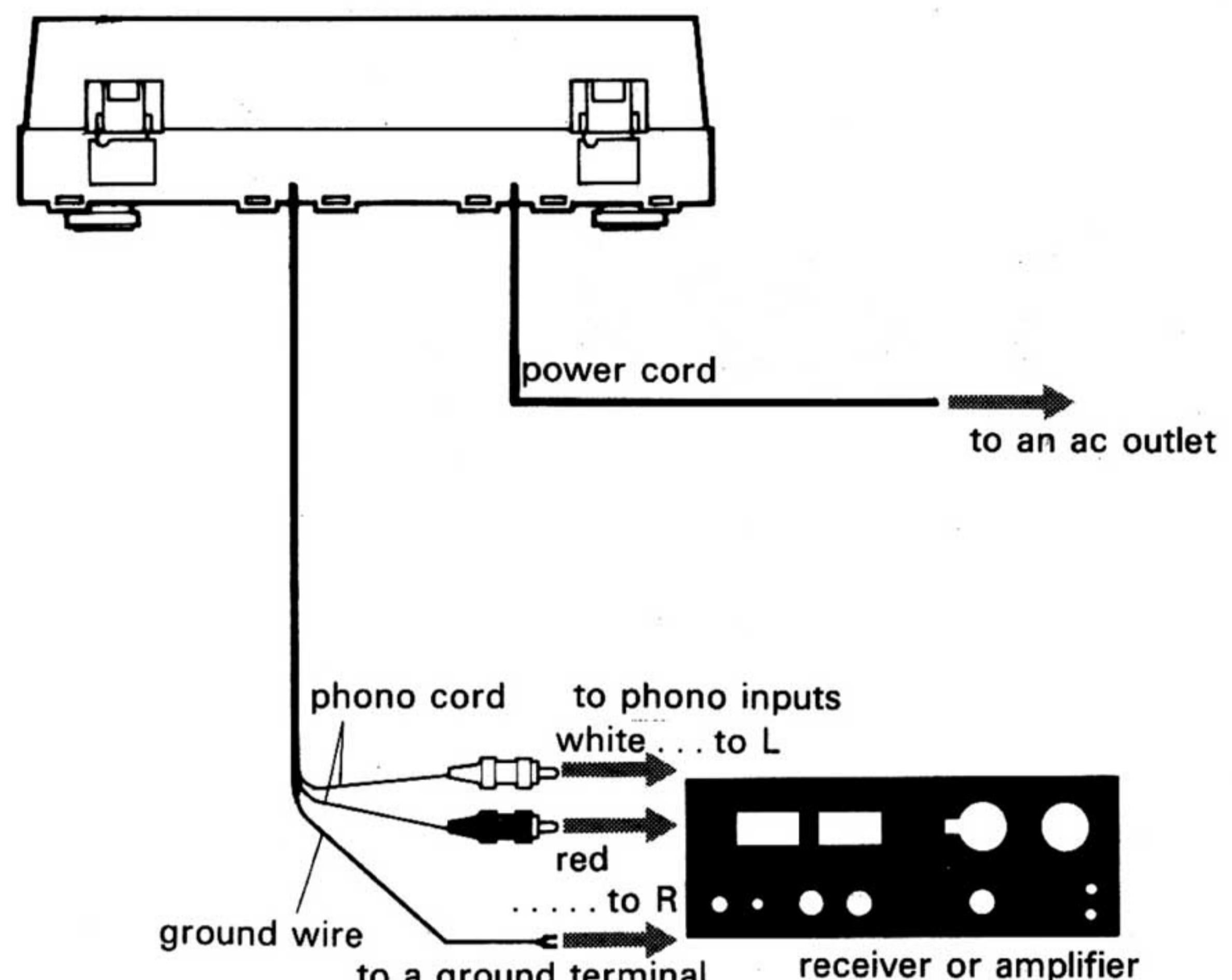
After the longitudinal balance adjustment, apply the recommended tracking force weight so that the stylus tip will trace the music groove accurately.

*3 Anti-skating compensation

While the record is being played, the frictional force between the record groove and the stylus produces a force that tends to drive the tonearm toward the center of the record. The anti-skating compensation cancels the above mentioned force, and is applied in accordance with the tracking force.

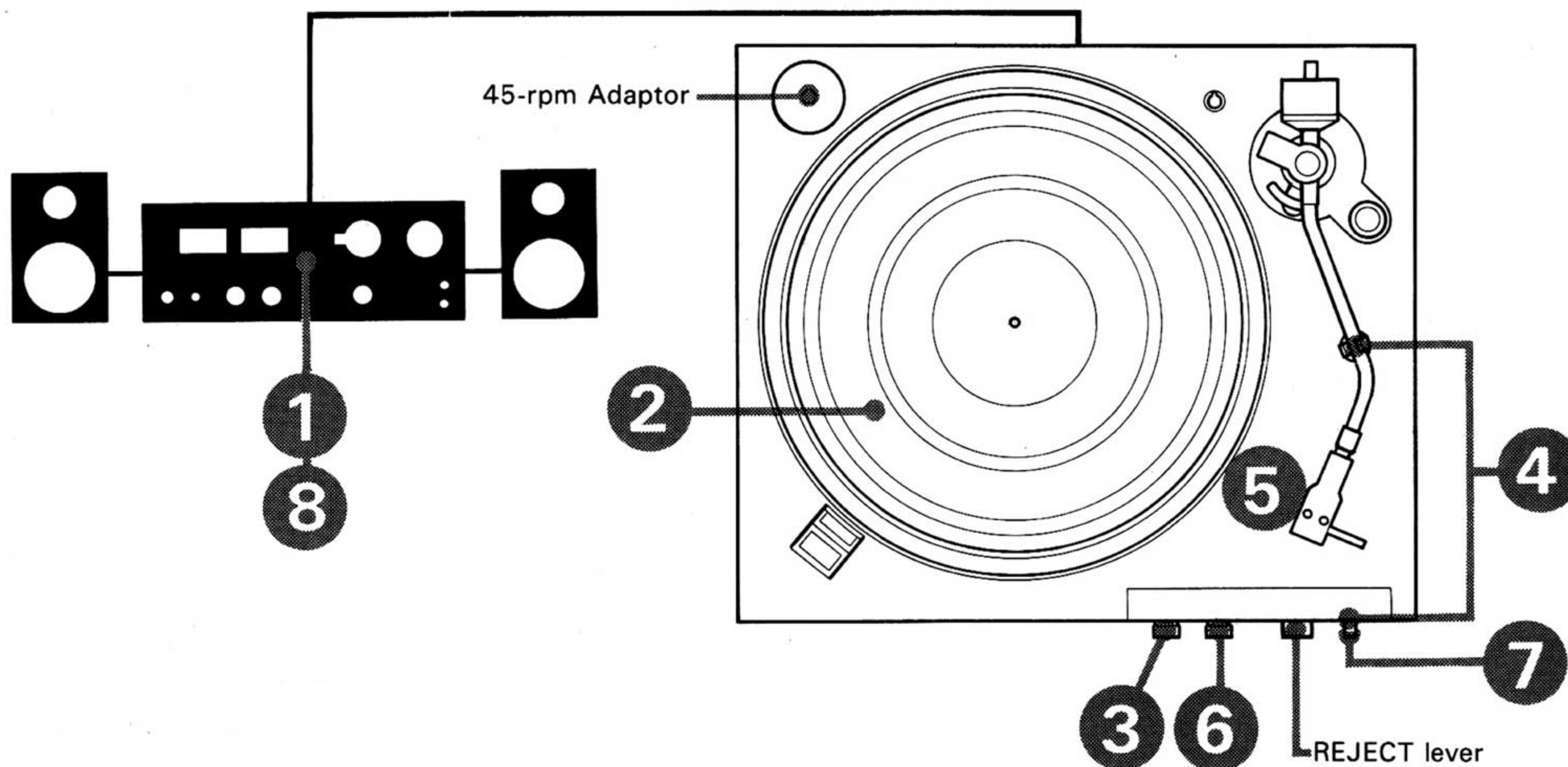
Incorrect anti-skating compensation results in sound distortion and uneven wear on both the stylus and the record.

- When connecting to an accessory ac outlet on the amplifier use an unswitched type outlet.
- Check that the phono cord and power cord are not caught under any foot of the cabinet.
- Leave a little slack in the connecting cord to allow for inadvertent shock or vibration.



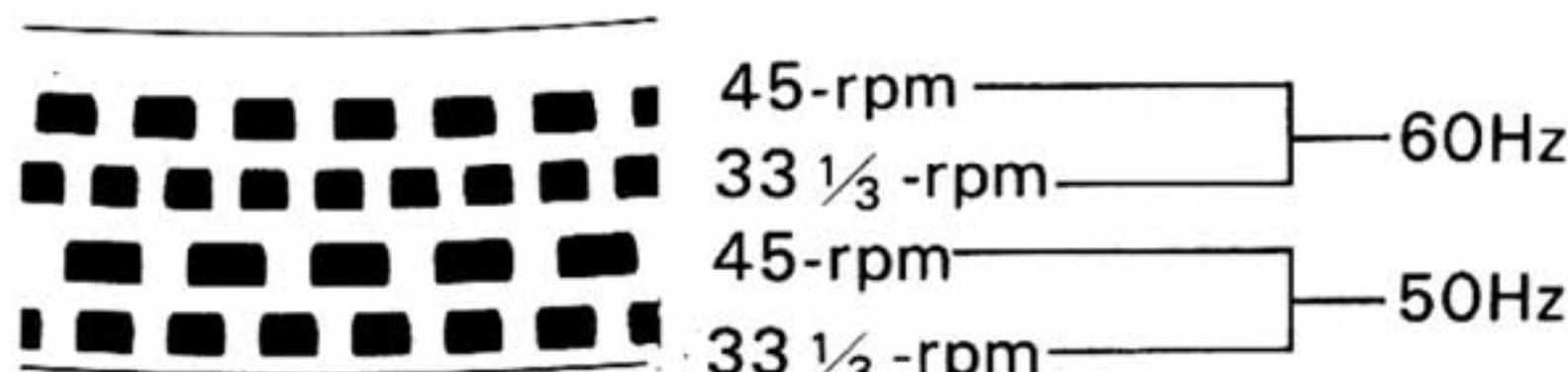
RECORD PLAYING

- The numbers in the illustration refer to the sequence of operations.



- ① Lower the receiver volume. Turn on the receiver and set the receiver input selector to PHONO.
- ② Place a record on the turntable.
- ③ For 17 cm (7-inches) records, put the 45-rpm Adaptor (supplied) over the Center Spindle.
- ④ Select the speed (either 33 or 45) with the SPEED selector according to the record speed that you wish to play.
- ⑤ Check that the Cueing Lever is up and release the Tonearm from the Arm Rest.
- ⑥ Remove the stylus guard and bring the Tonearm above the lead-in groove of the record to start the turntable.
- ⑦ By viewing the Stroboscope, adjust the speed with the PITCH control until the pattern appears stationary.

- To stop the turntable during play, press the REJECT lever. The Tonearm automatically returns to its rest, the Cueing Lever returns to the upper position and the unit is turned off. Secure the Tonearm to the Arm Rest.
- To raise the Tonearm manually during play or to change the listening point, use the Cueing Lever.



stroboscope pattern

If the pattern moves to the right	→ Turn the control in the "F" (fast) direction.
If the pattern moves to the left	→ Turn the control in the "S" (slow) direction.

- ⑧ Lower the Cueing Lever. The Tonearm will automatically lower onto the record and the record playing will begin.
- ⑨ Adjust the sound level, stereo balance and tone quality of the receiver according to your preference.
- After playing, the Tonearm automatically returns to its rest, the Cueing Lever returns to the upper position and the unit is turned off. Secure the Tonearm to the rest.

TIPS ON RECORD HANDLING

Before playing

- Clean the stylus, using a soft brush (stylus brush, artist's paint brush, etc). Brush the stylus from back to front. Never attempt to clean the stylus with your finger tip.
- For routine cleaning of records, the use of a barely damp soft cloth (gauze, etc.) or a fluid type cleaner will be effective. If a spray type record cleaner is used, make sure that the cleaner has dried completely before playing the records. Playing the record before the fluid has dried may damage the record. It is a good idea to clean the record again before putting it away.
- Handle a record by its edges and don't touch the music grooves. Finger prints on the record surface may induce an accumulation of dust, resulting in impaired tone.

When record playing

- It is recommended that you reduce the amplifier volume before you lower the tonearm onto the record.
- While the turntable is energized, don't attempt to stop or reverse the turntable by hand.
- During play, be sure to close the dust cover. Don't place anything on the dust cover.
- While playing, never attempt to move the turntable or touch the tonearm.

After playing

- Avoid exposing records to any source of heat, such as direct sunlight, a hot-air duct, etc. Store records vertically without applying any pressure or inclining to either side. This will minimize any warpage.
- When not using the turntable, close the dust cover.

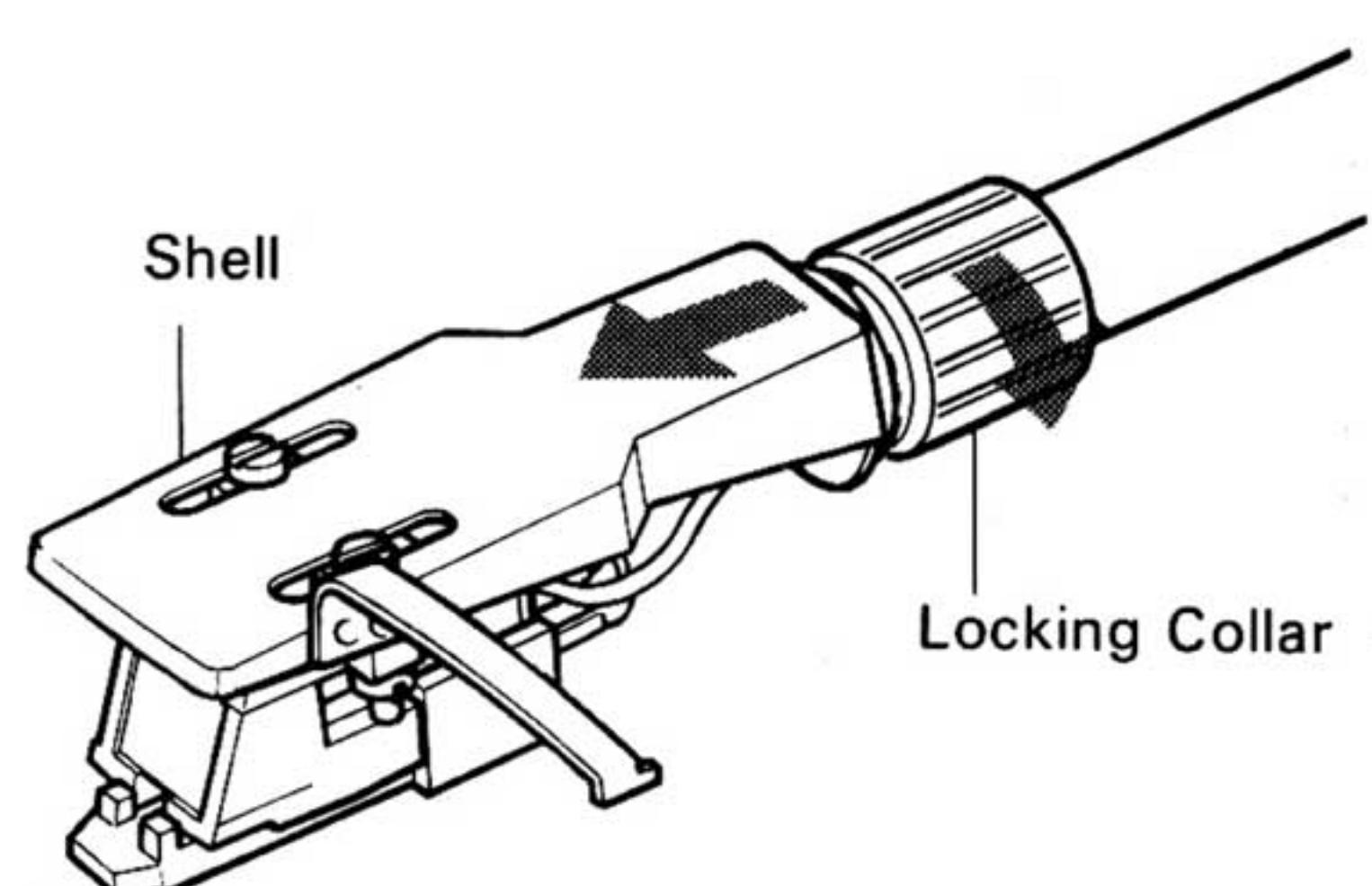
Other precautions

- Don't put anything but records on a turntable.
- Don't place anything but the spare cartridges and 45-rpm adaptor on the turntable deck.

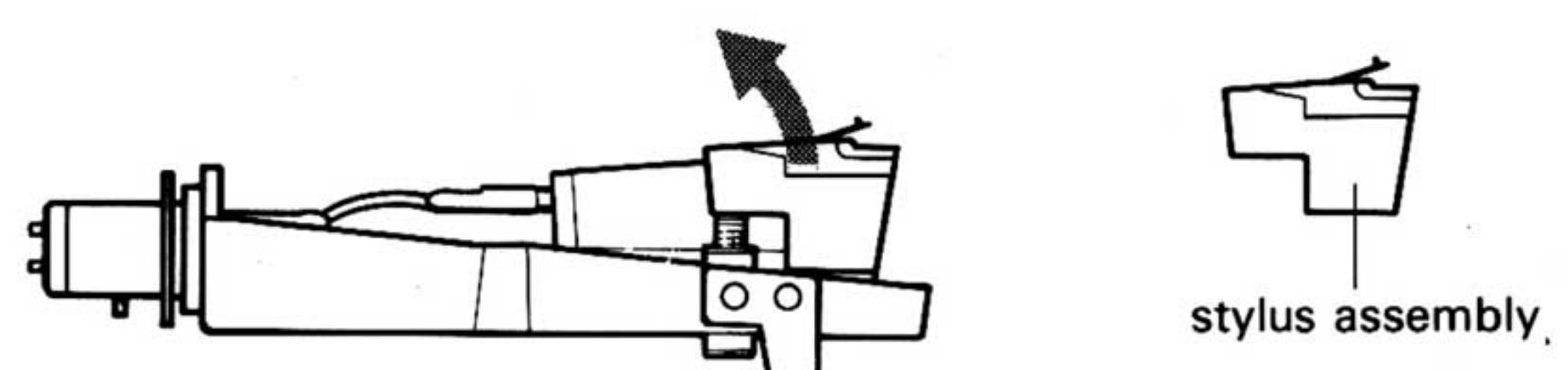
STYLUS REPLACEMENT

The stylus will wear out after about 400 hours of use. The replacement stylus is available at your Sony dealer. Handle the stylus carefully as it is a highly precise and delicate device. Install the replacement stylus as follows:

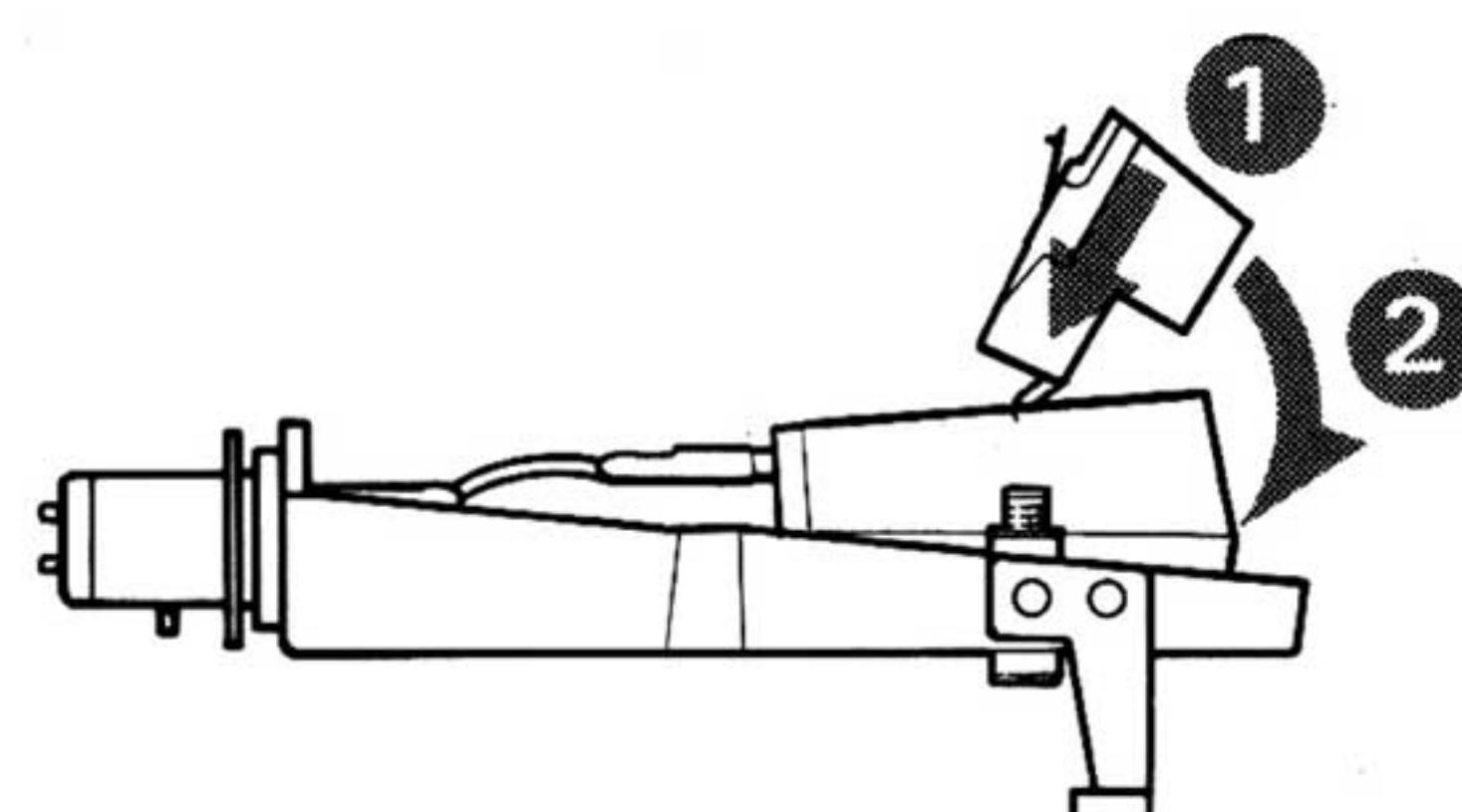
- ① Lower the sound level or turn off the receiver.
- ② Turn the Locking Collar clockwise and remove the Shell from the Tonearm.



- ③ Remove the stylus guard.
- ④ Grasp the stylus assembly between the thumb and forefinger and turn it gently in the direction of the arrow in the illustration. The stylus assembly will be removed.

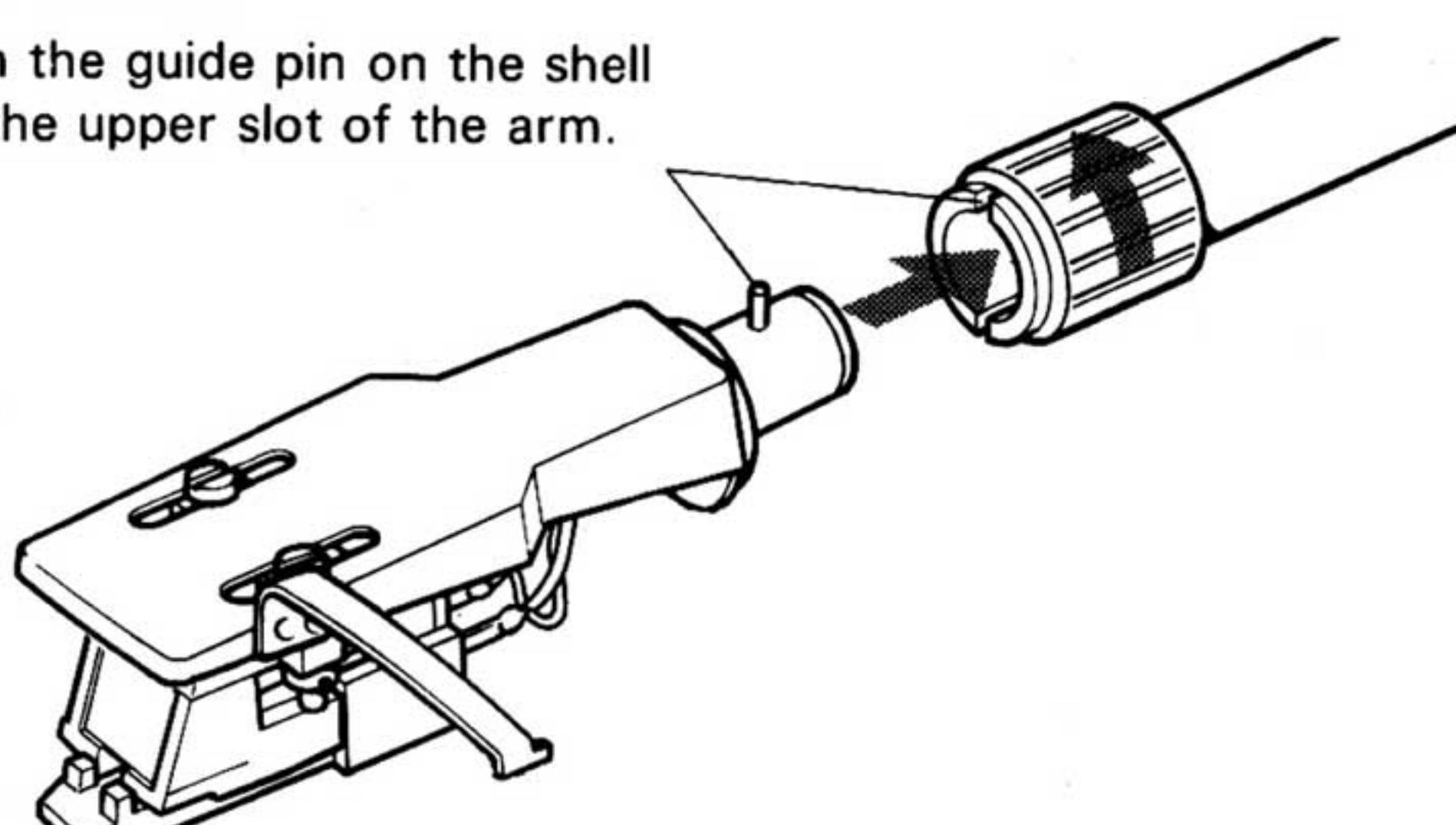


- ⑤ Insert the new stylus assembly onto the cartridge.



- ⑥ Insert the stylus guard and plug the Shell into the Tonearm and turn the Locking Collar counterclockwise until the Shell is firmly locked.

Match the guide pin on the shell with the upper slot of the arm.

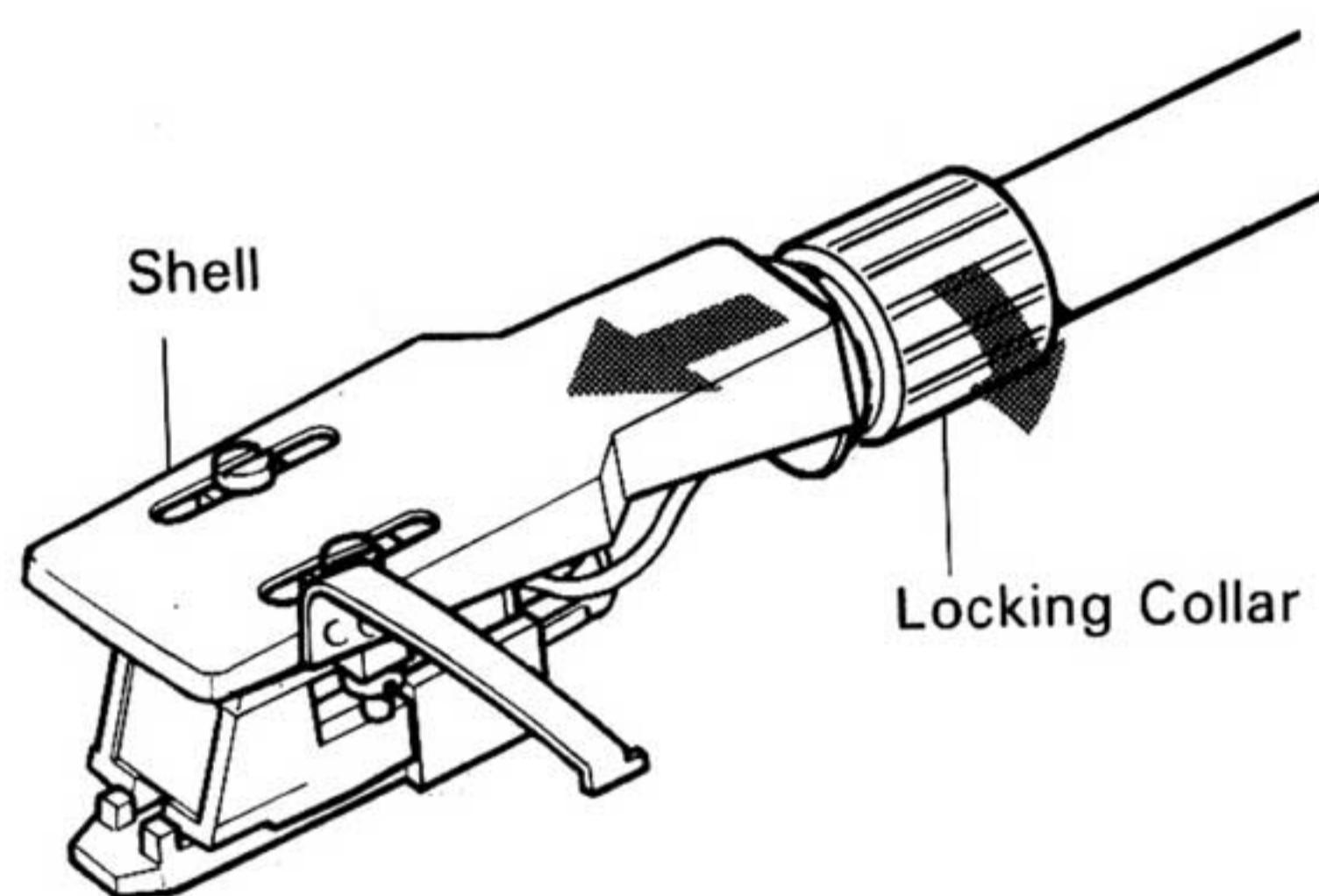


USING ANOTHER CARTRIDGE

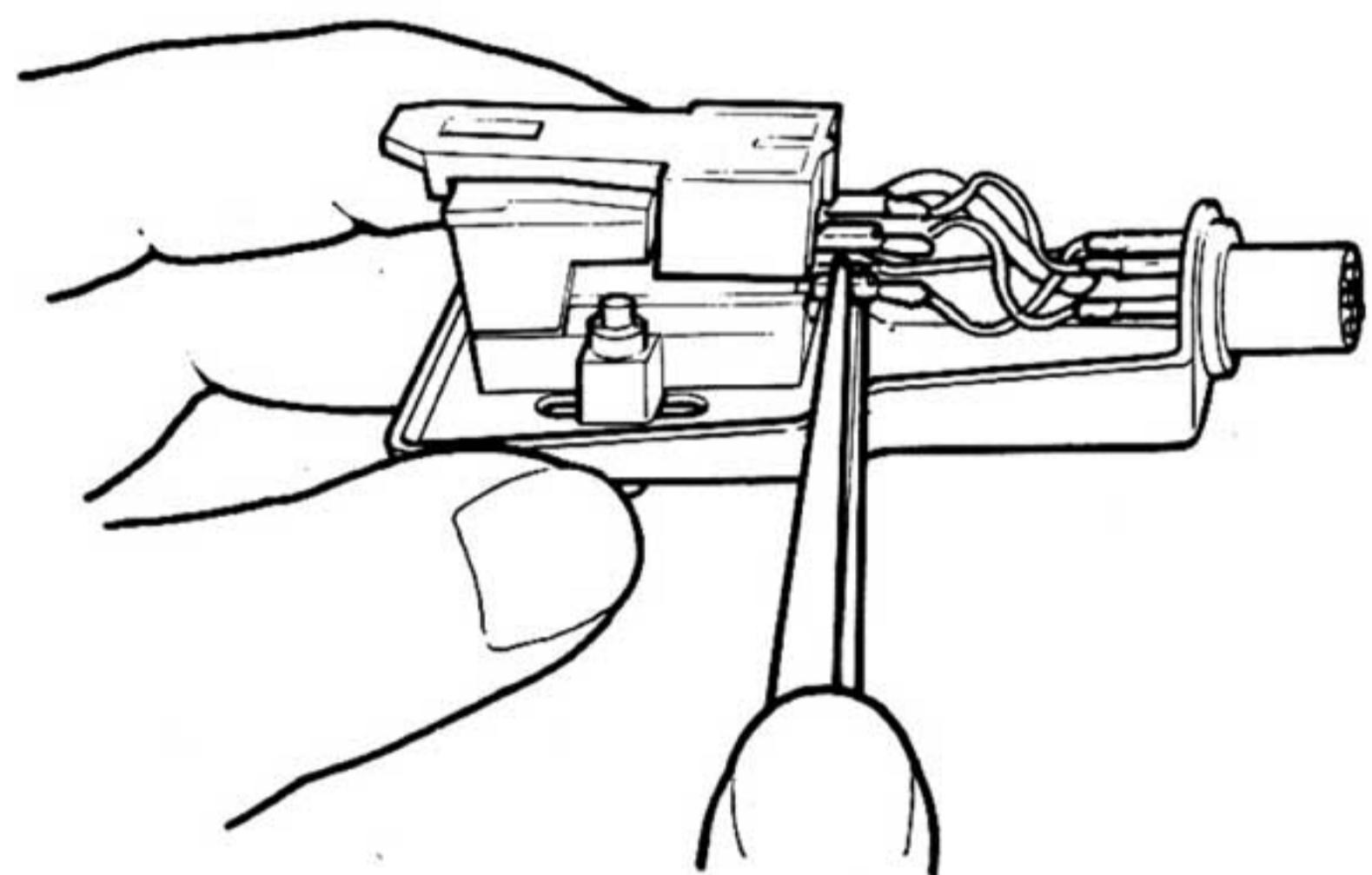
The total weight of the shell and cartridge should be between 8 and 15 g.

Cartridge replacement

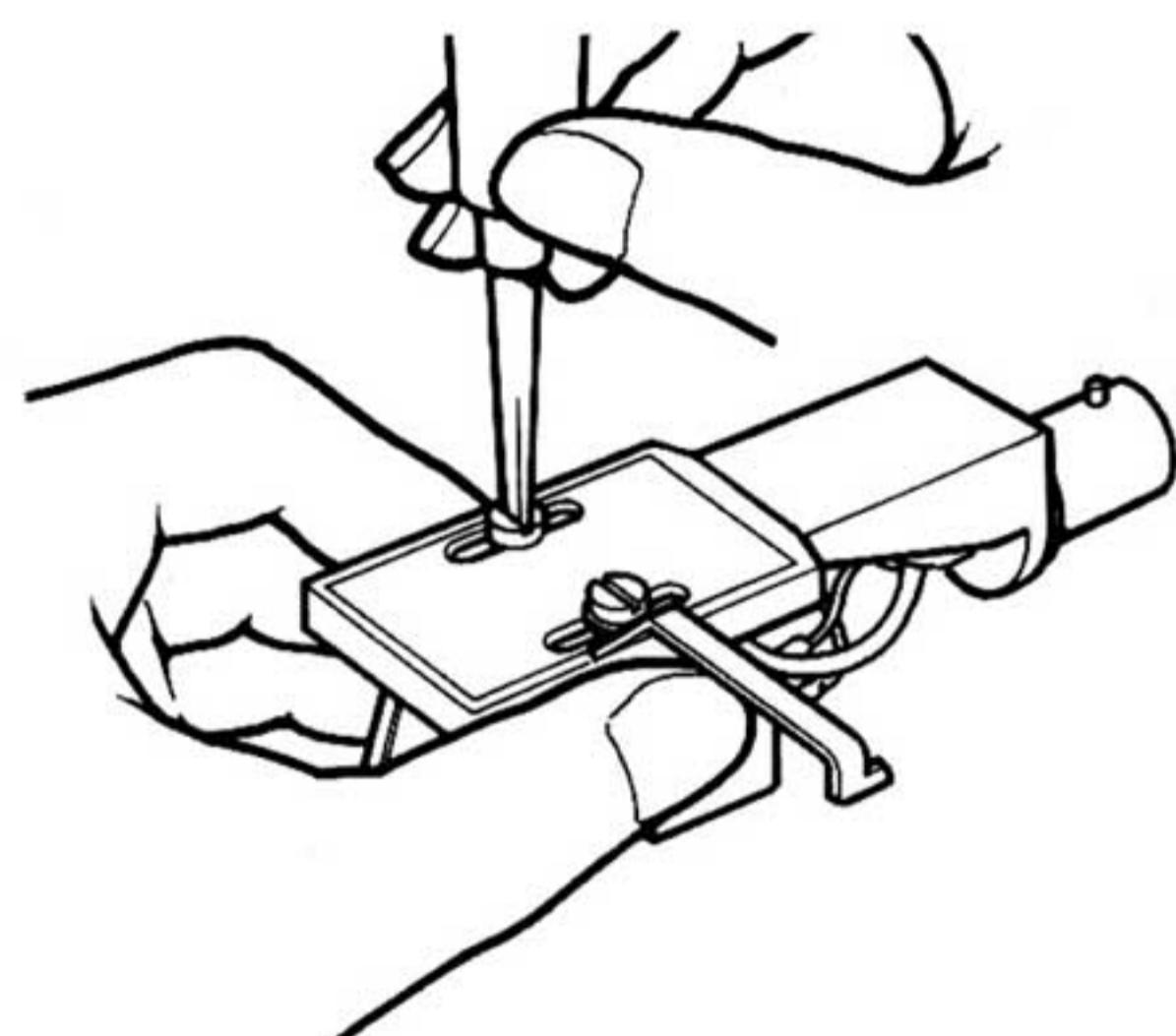
- 1 Lower the sound level or turn off the receiver.
- 2 Turn the Locking Collar clockwise and remove the shell from the Tonearm.



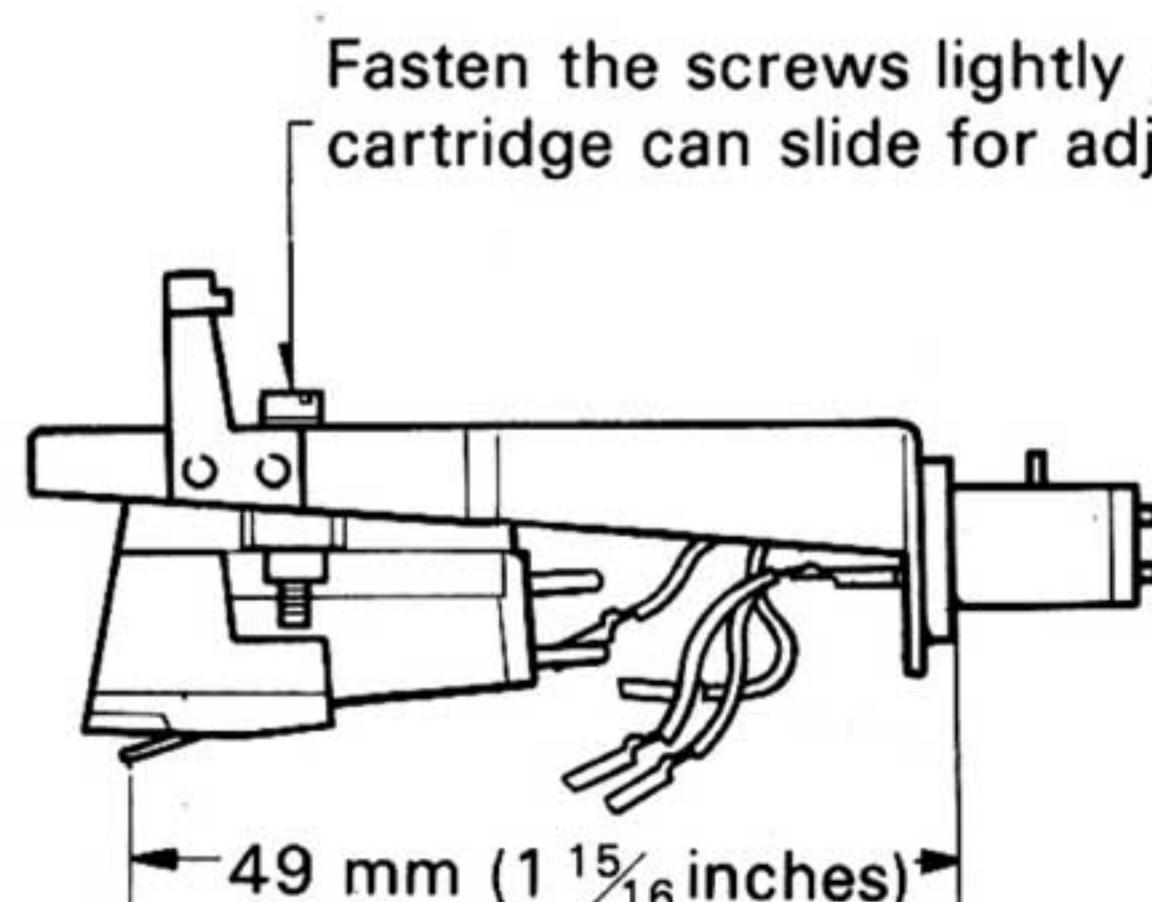
- 3 Unplug the four-pin connectors of the shell from the four output terminals of the cartridge.



- 4 Remove the old cartridge by loosening the two mounting screws.



- 5 Install the cartridge into the shell with the supplied mounting screws so that the distance between the shell end and the stylus tip is 49 mm (1 15/16 inches). The temporary overhang adjustment is then complete. More precise adjustment should be made later.

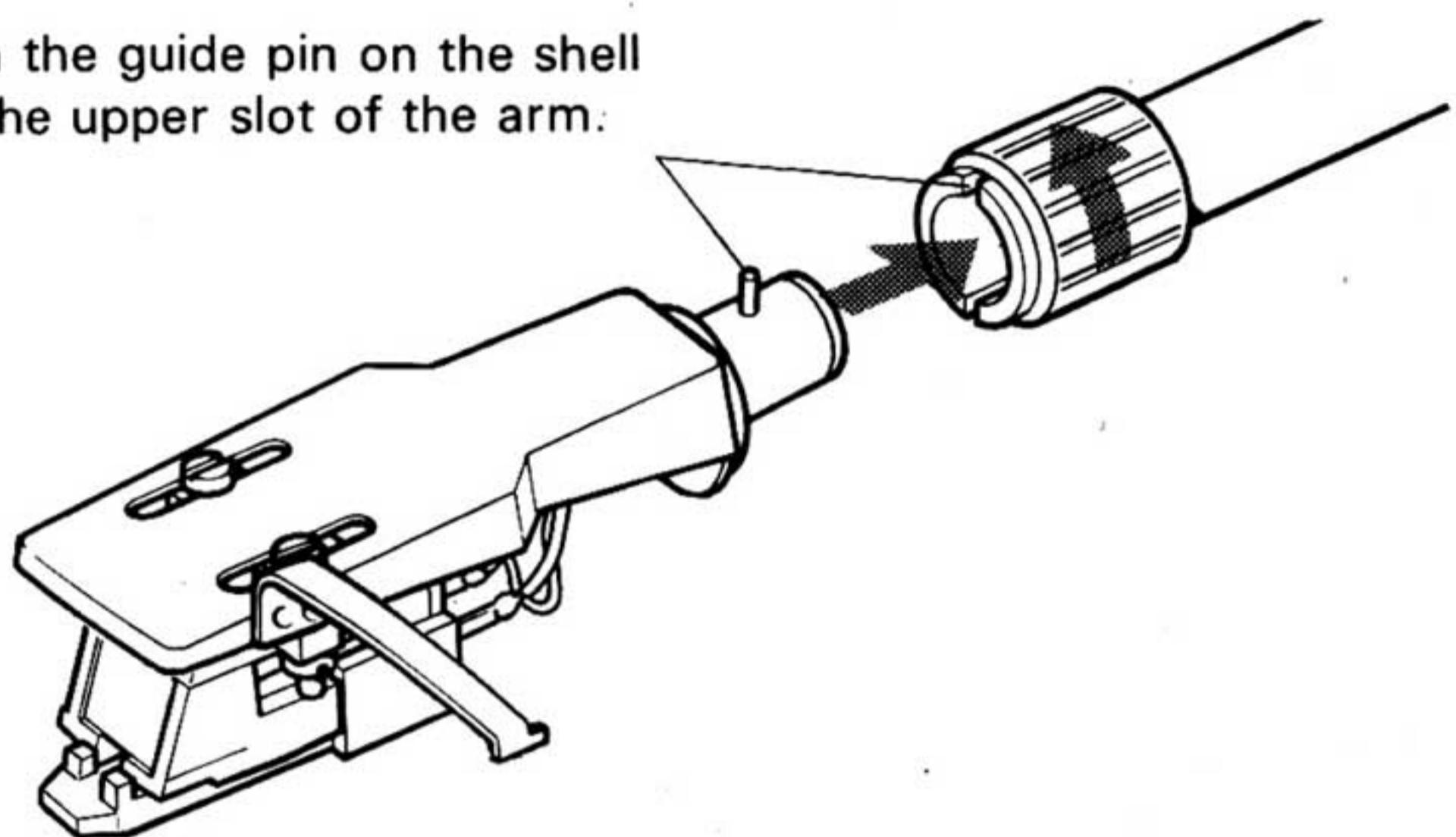


- 6 Connect the lead wires of the shell to the corresponding pins on the cartridge.

Wires	Cartridge pins
White	L (left channel signal)
Blue	LE or G (left channel ground)
Red	R (right channel signal)
Green	RE or G (right channel ground)

- 7 Plug the shell into the Tonearm and turn the Locking Collar counterclockwise until the shell is firmly locked.

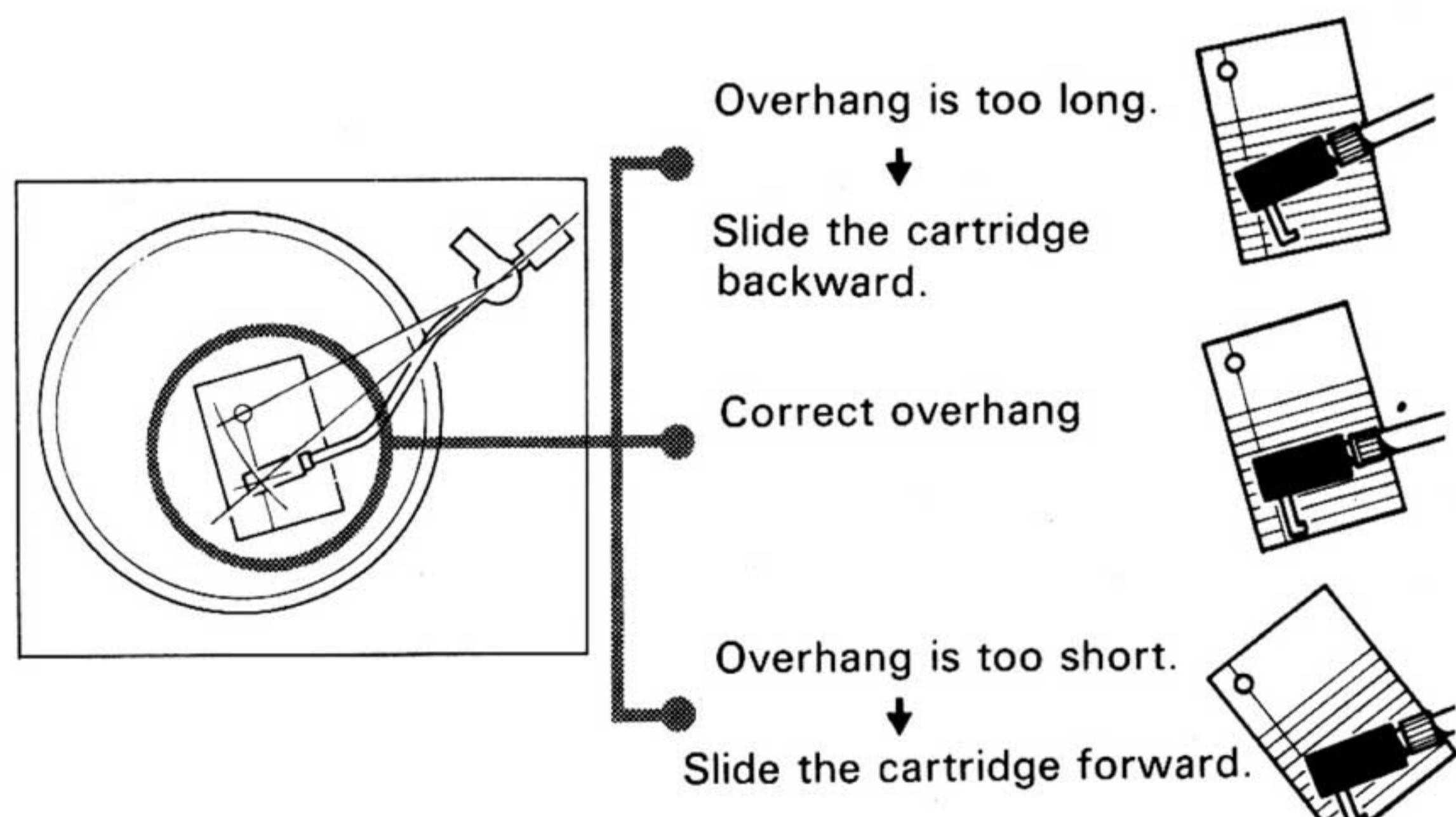
Match the guide pin on the shell with the upper slot of the arm.



Overhang check

Check that the stylus overhang is set correctly by using the Alignment Protractor supplied.

- 1 Place the hole of the Alignment Protractor over the Center Spindle.
- 2 Bring the Tonearm above the cross point of the two fine lines, and carefully lower the stylus on the cross point with the Cueing Lever.
- 3 Check to see that the Shell is parallel to the thick lines drawn on the Alignment Protractor as shown in the center illustration. If they are parallel, the stylus overhang is set correctly.



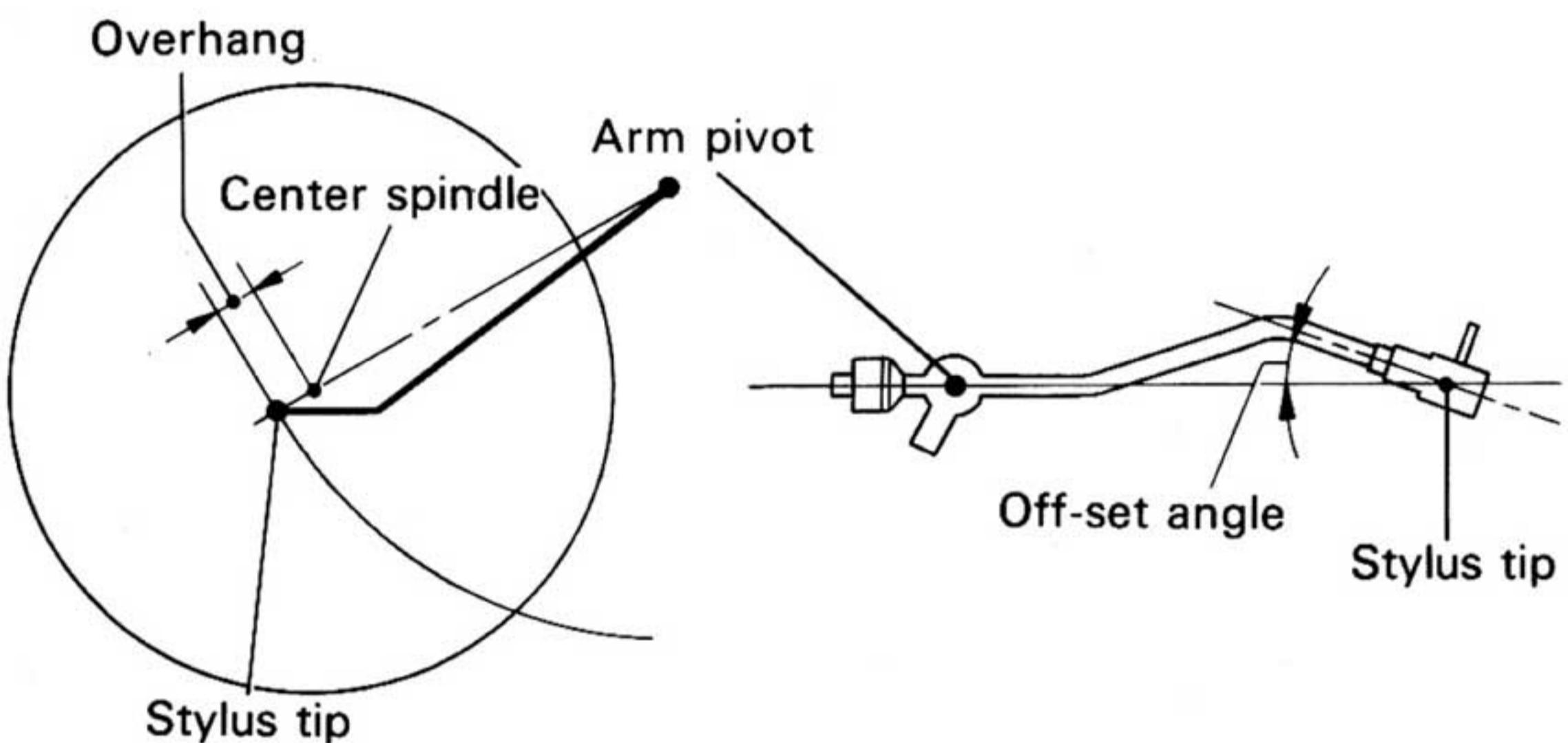
- 4 If the Shell is not parallel, readjust the stylus overhang.
 - 1) Loosen the cartridge mounting screws and slide the cartridge in the required direction.
 - 2) Re-tighten the screws.
- Adjust the Tonearm again according to the "TONEARM ADJUSTMENT".

REPACKING FOR SHIPMENT

Overhang

In record playing, because of the pivoted design of the tonearm, the stylus tip can be perfectly tangent to the music groove at only one point of the record. At all other portions of the record, there is a slight deviation of the stylus from tangency. This is called the tracking error, and introduces minute errors in the amplitude and timing of the reproduced signal as compared to the original, and other forms of distortion which may be introduced depending on the cartridge and stylus design.

Tracking error is minimized by the selection of an optimum "off-set" angle and "overhang" distance. Overhang is the distance between the stylus tip and the center spindle. This overhang adjustment is made at the time of installing a particular cartridge, while the off-set angle is fixed by the manufacturer of the tonearm.

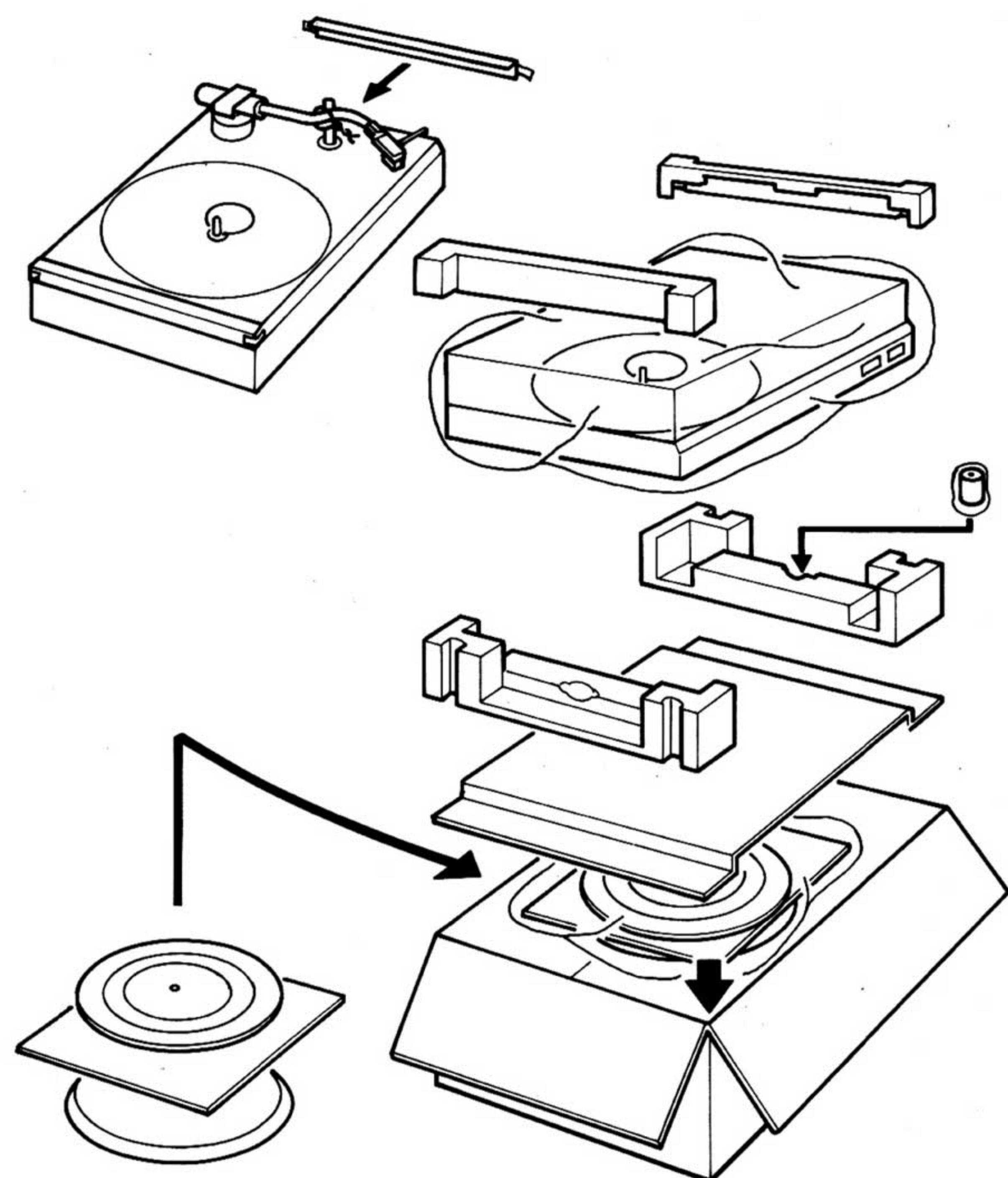


MAINTENANCE

- Clean the cabinet and dust cover periodically with a soft dry cloth. Do not use solvents such as alcohol, benzine or thinner, since they will damage the finish.
- When the rubber mat becomes dirty, wipe it gently with a soft cloth slightly dampened with water.
- No lubrication is required for this turntable. The motor shaft is factory lubricated for the life of the turntable.

The original shipping carton and packing material (which we asked you to save) are the ideal container for use in shipping the unit for repair work, or to another location. To secure the maximum protection, it must be repacked in this material precisely as before. The proper repacking procedure is shown in the illustration.

- Clip the tonearm to the arm rest and bind it there with a tape.



SPECIFICATIONS

Turntable	
Platter	31 cm (12 1/4") dia., Aluminum-alloy die-cast
Motor	DC servo-controlled motor (brushless and slotless)
Drive system	Direct drive
Speed	33 1/3 rpm, 45 rpm
Pitch control range	±3%
Wow and flutter	0.03% WRMS
Signal-to-noise ratio	70 dB (DIN-B)

Tonearm	
Type	Statically balanced, universal
Pivot to stylus length	216.5 mm (8 1/2")
Overall arm length	300 mm (11 3/4")
Overhang	16.5 mm (21/32")
Tracking error	+3°, -1°
Tracking-force adjustment range	0 - 3 g
Shell weight	7.5 g
Weight range of cartridge and shell	8 - 15 g

Cartridge VL-33G	
Type	Moving magnet type.
Frequency response	10 Hz - 20 kHz
Channel separation	20 dB at 1 kHz
Output voltage	2.5 mV at 1 kHz, 5 cm/sec, 45°
Load impedance	50 kilohms
Tracking force	2 - 3 g (2.5 g recommended)
Stylus	Sony ND-136G (Conical 0.6 mil diamond)
Weight	5.5 g

General	
Power requirements	120 V ac, 60 Hz
Power consumption	6 W
Dimensions	Approx. 410×125×370 mm (w/h/d) (16×5×14 1/2 inches)
Weight	incl. projecting parts and controls Approx. 4.8 kg (10 lb 10 oz) net Approx. 5.8 kg (12 lb 13 oz) in shipping carton
Supplied accessories	Alignment Protractor 45-rpm Adaptor

Design and specifications subject to change without notice.

TROUBLE CHECKS

The following chart will help correct most problems which may occur with the unit. If the problem persists after you have made these checks, consult your Sony Service Station or Sony dealer.

Impaired tone quality

- Turntable not level
- Unit incorrectly placed on or near a speaker
- Dusty stylus
- Worn stylus or defective record (The stylus life is approx. 400 hours of playing time.)
- Incorrect cartridge installation
- Improper tonearm balance
- Improper tracking force
- Improper setting of the Anti-skating Compensator
- Improper turntable speed

No audio from one channel

- Loose attachment of the shell to the tonearm
- Loose connection of phono cord
- Low volume level setting for one channel of the amplifier
- Incorrect connection of the shell lead wires

Groove skipping, Tonearm tends to skate out, Tonearm does not advance (record repeats)

- Turntable not level
- Defective record
- External vibrations
- Improper tracking force
- Improper setting of the Anti-skating Compensator

Steady low-pitched sound (hum)

- Loose ground wire connection to the amplifier
- Loose connection between the shell and the tonearm
- Incorrect connection of the shell lead wires

Loud rumble or low-frequency "howl" which occurs when playing a record at high sound levels (acoustic feedback*)

- Put the turntable on a sturdy surface.
- Put the turntable as far away from the speakers as possible.
- If the above does not rectify the problem, try commercially available acoustic insulators designed to be put between the feet and shelf.

* Acoustic feedback: The vibration of speakers is transmitted through the air or via solid objects (shelves, cabinets, floor, etc.) to the turntable, picked up by the cartridge stylus, amplified, and again reproduced through the speakers.